



Image pack to accompany design LD-GCRE-PH1

Global Centre for Rail Excellence Phase 1

GCRE
Phase 1
Site Layout

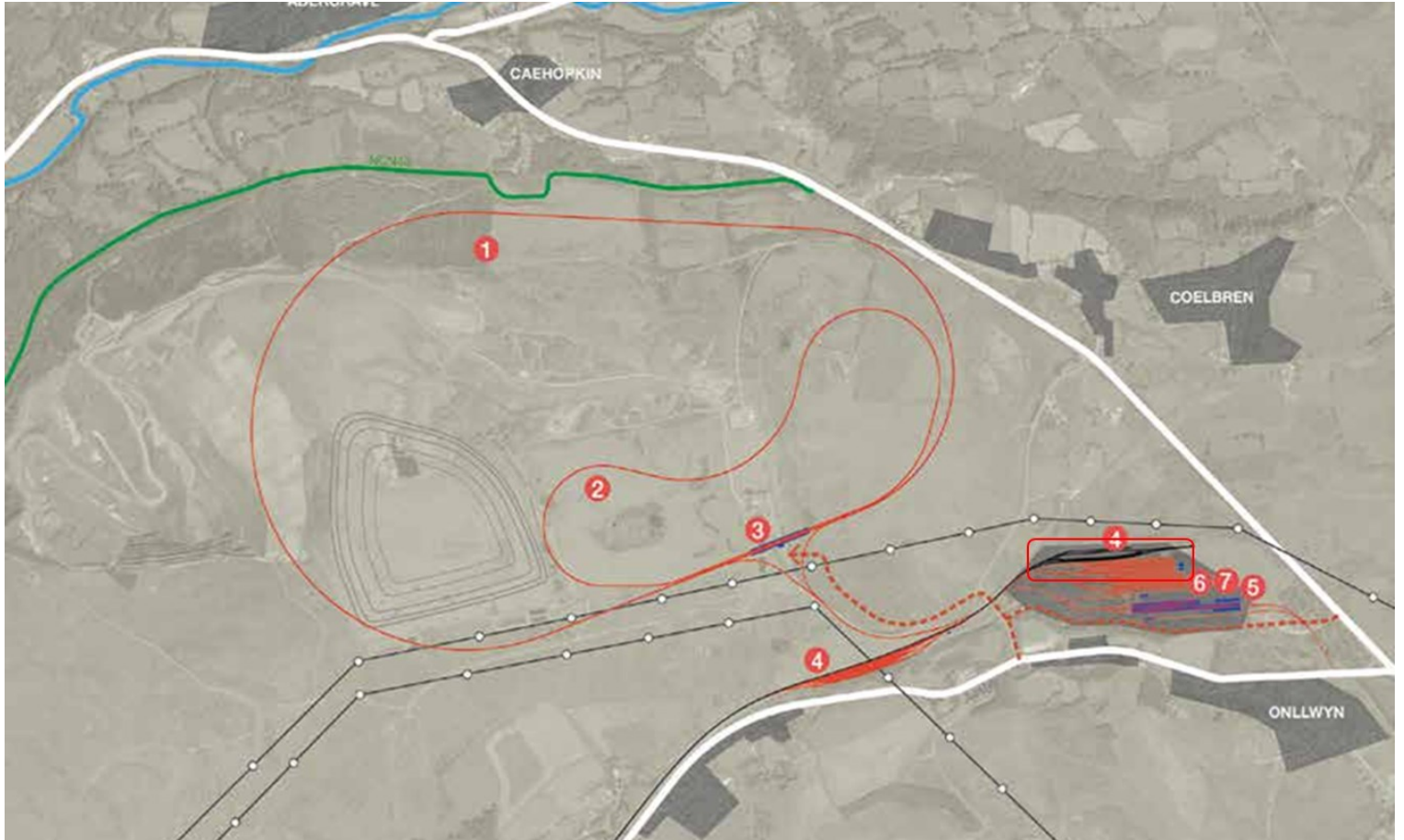
GCRE
Full Site
Satellite
Image



GCRE-PH1
Location
Satellite
Image

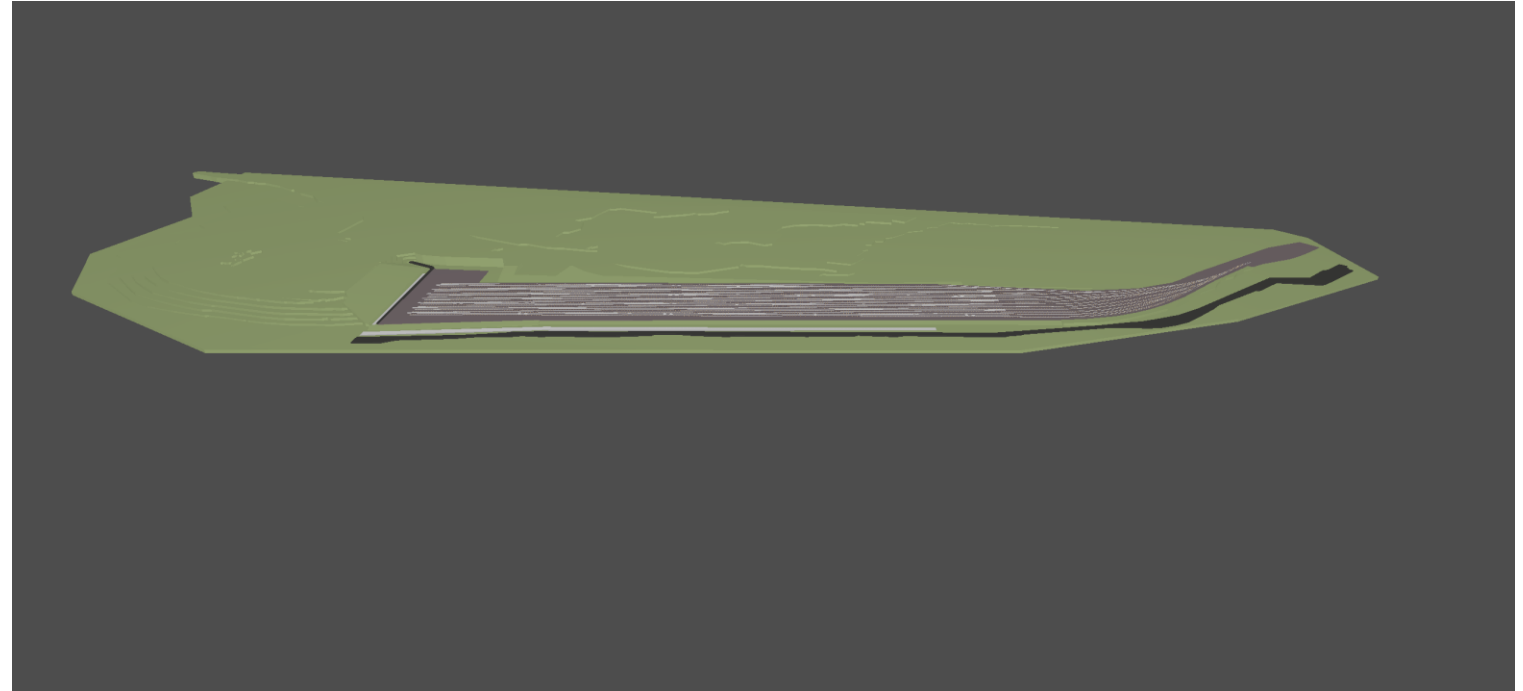


GCRE-PH1
Site
Development
Overlay

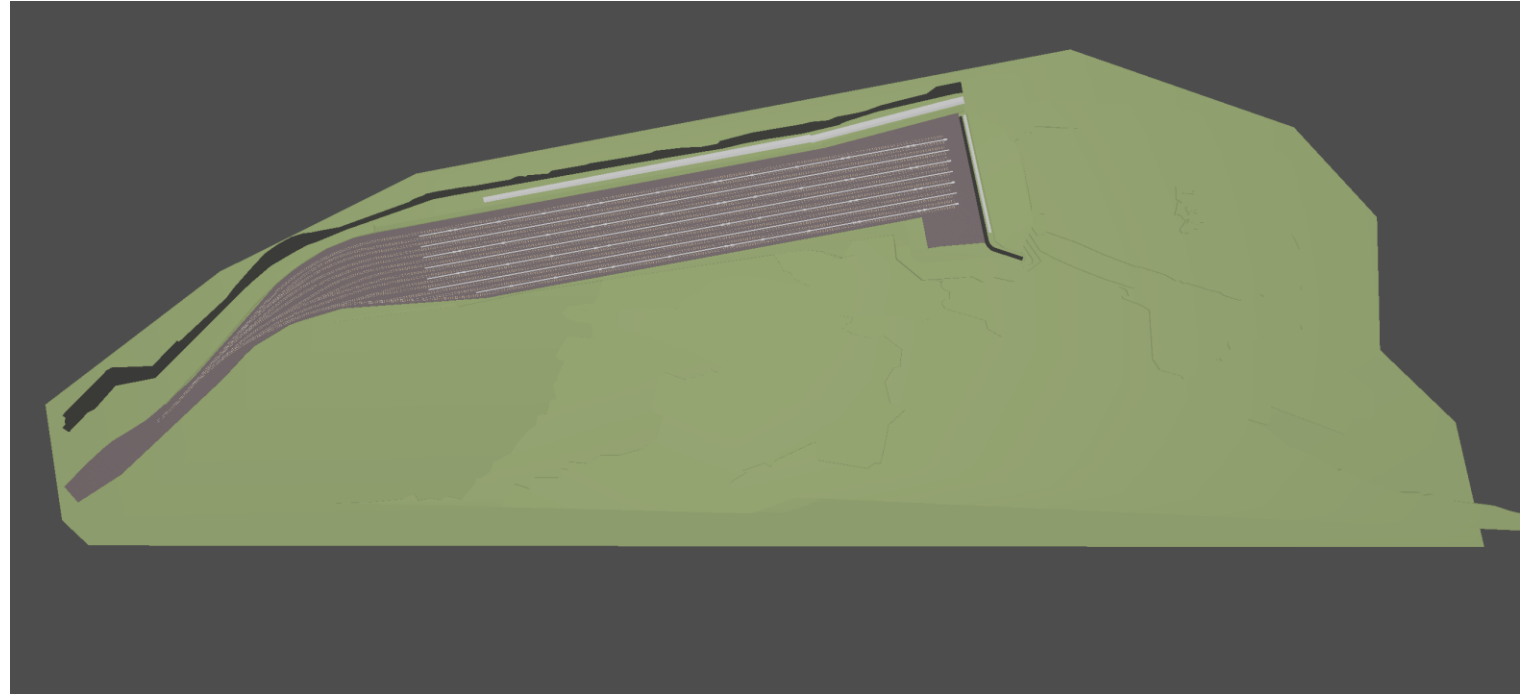


GCRE
Phase 1
Worst-case Scenario
Design Images

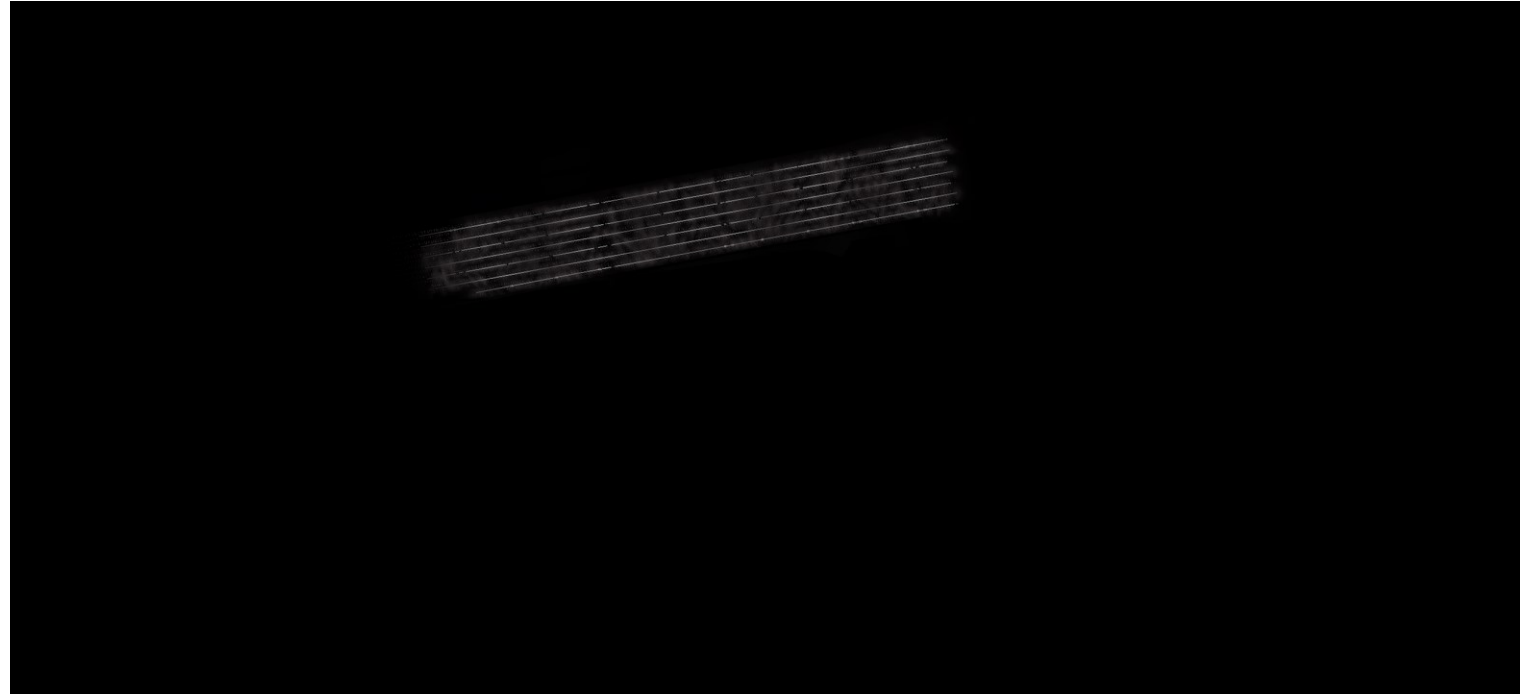
GCRE-PH1
Topography
Viewed from
the North



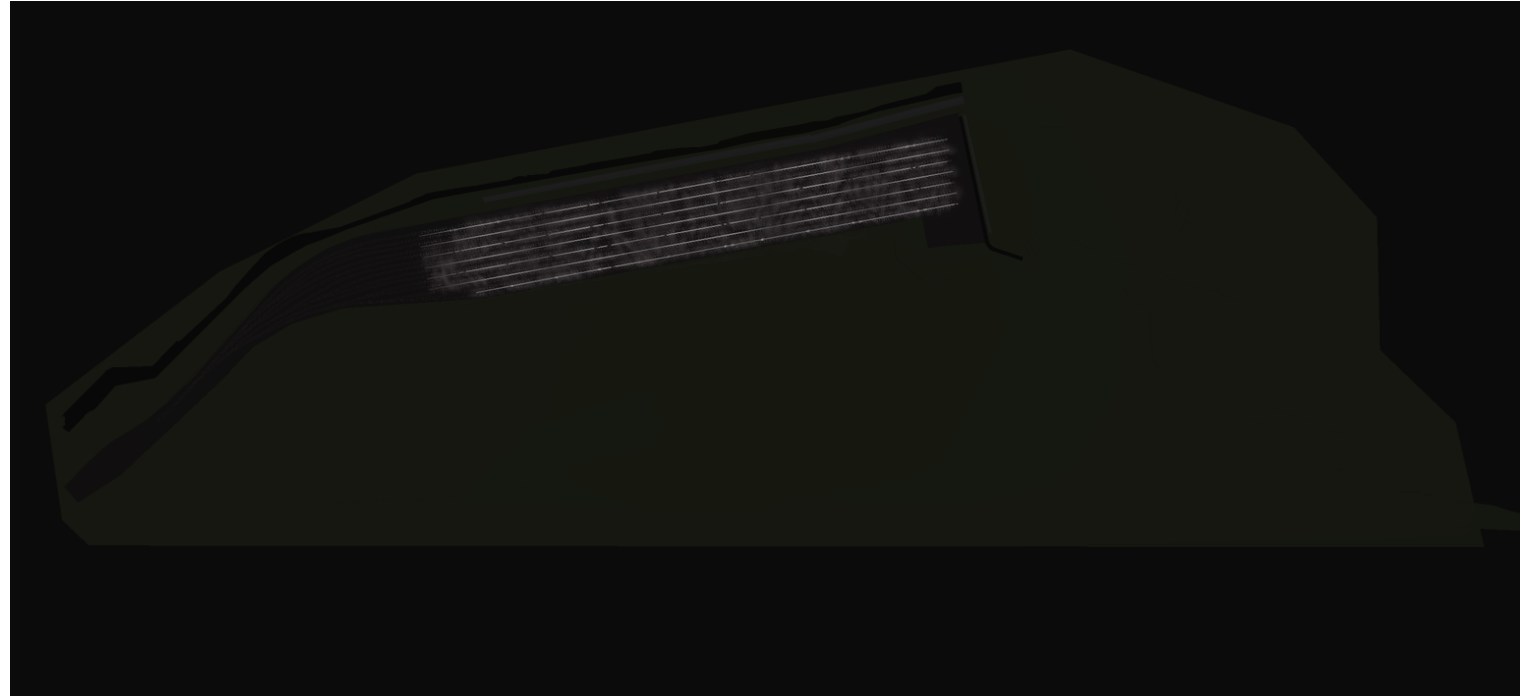
GCRE-PH1
Worst-case
Scenario
Model Plan
View Unlit



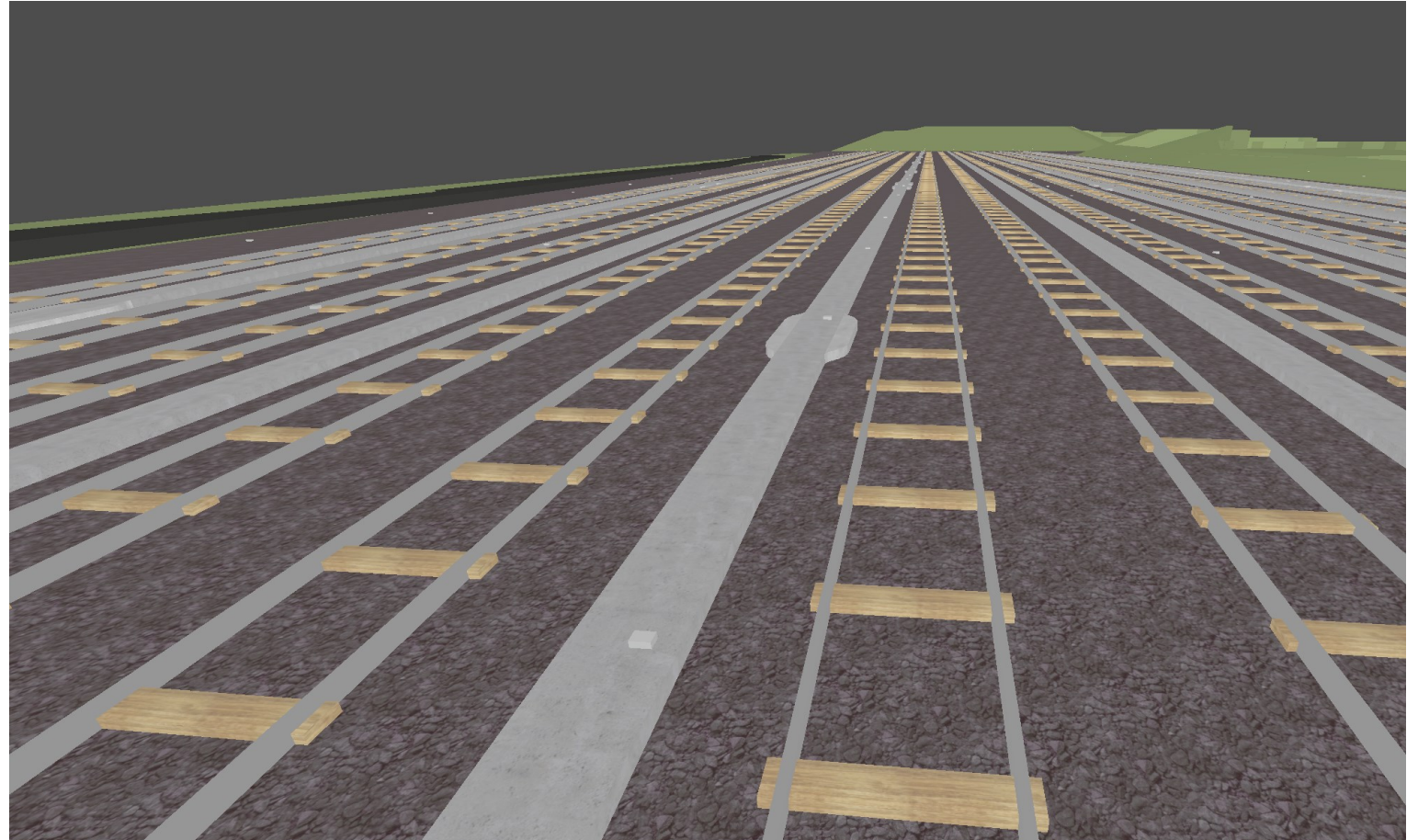
GCRE-PH1
Worst-case
Scenario
Model Plan
View Lit



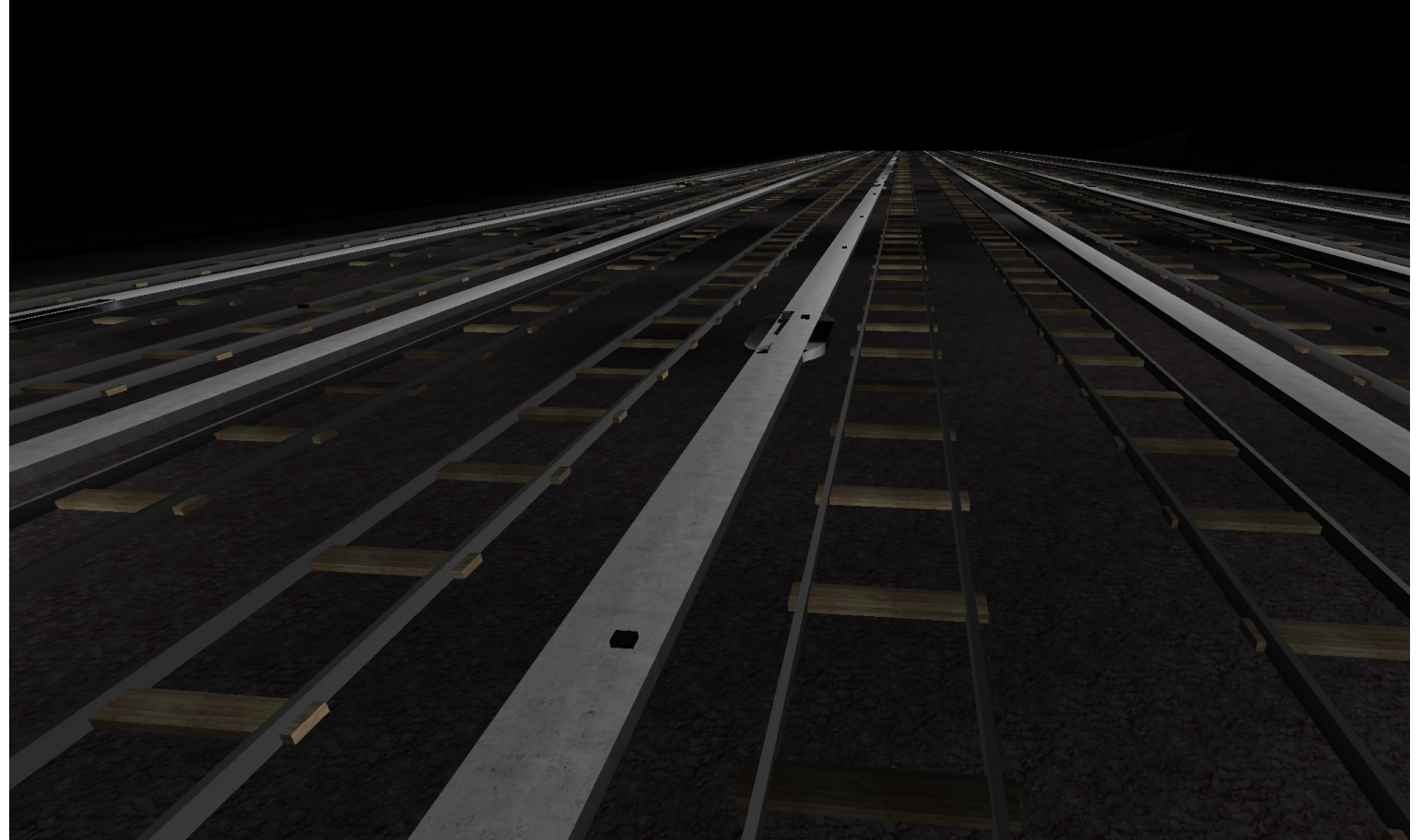
GCRE-PH1
Worst-case
Scenario
Model Plan
Overlay Lit



GCRE-PH1
Worst-case
Scenario
Track View
Unlit



GCRC-PH1
Worst-case
Scenario
Track View Lit



GCRE
Phase 1
Worst-case Scenario
Sky Glow Results

GCRE-PH1 Worst-case Scenario Sky Glow Results

General

Calculation algorithm used low indirect fraction
Maintenance factor see luminaires / maintenance plan

Total luminous flux 244971 lm
Total power 3250.8 W
Total power per area (684048.62 m²) 0.00 W/m²

Illuminance

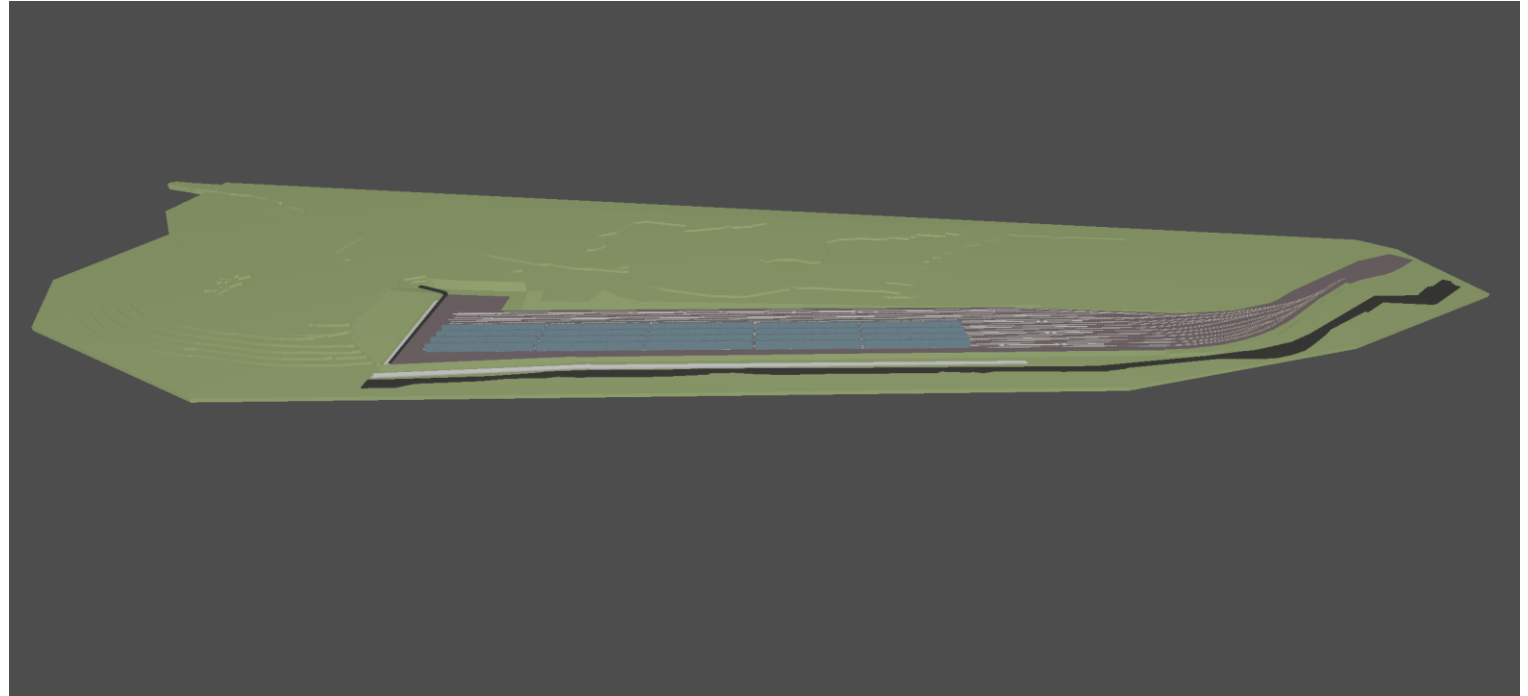
Average illuminance	Em	1.09 lx
Minimum illuminance	Emin	0.03 lx
Maximum illuminance	Emax	3.11 lx
Uniformity Uo	Emin/Em	1:36.4 (0.03)
Diversity Ud	Emin/Emax	1:104 (0.01)

Type No.\Make

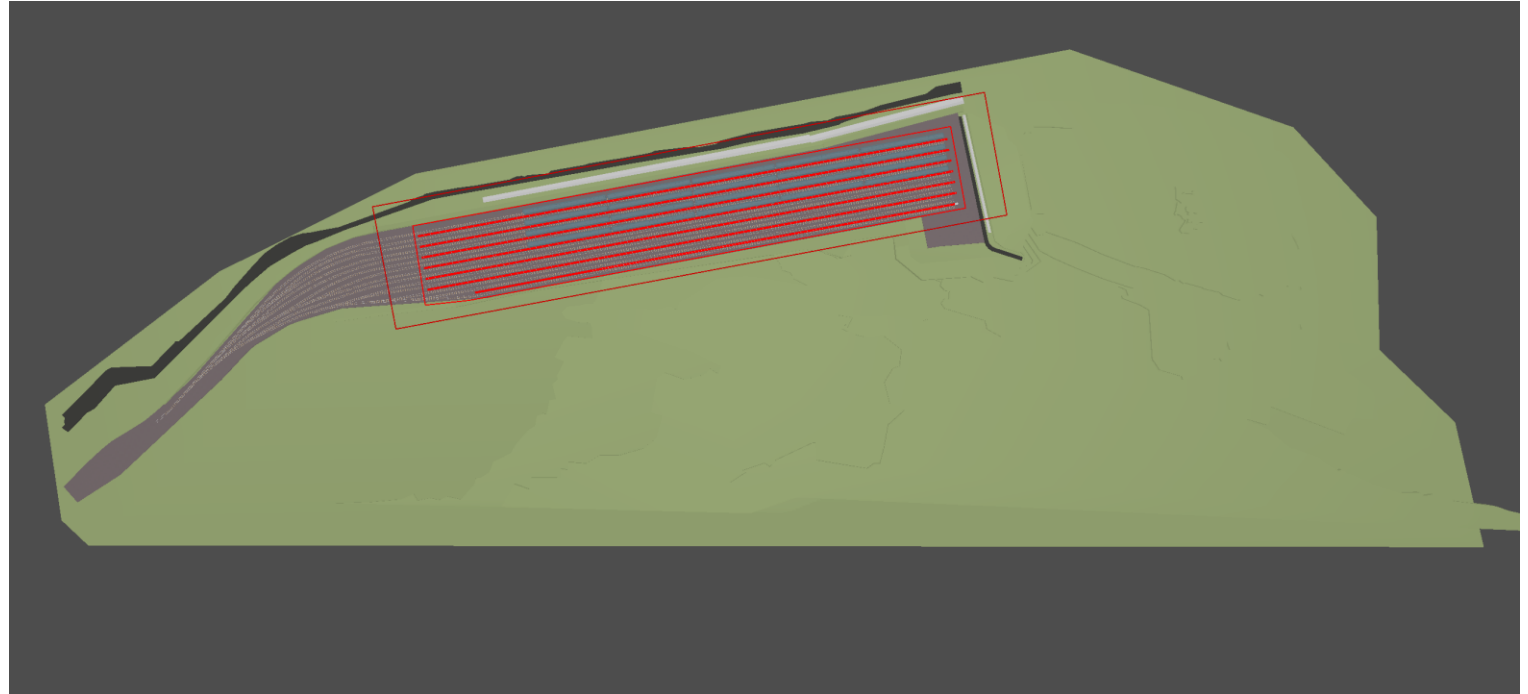
1	387 x	Designplan
		Order No. : TRK-1200-630N-MT
		Luminaire name : Trackline TRK-1200-630N-MT
		Equipment : 1 x LED 8.4 W / 633 lm
		Maintenance factor : 0.89

GCRE
Phase 1
Typical Scenario
Design Images

GCRE-PH1
Topography
Viewed from
the North



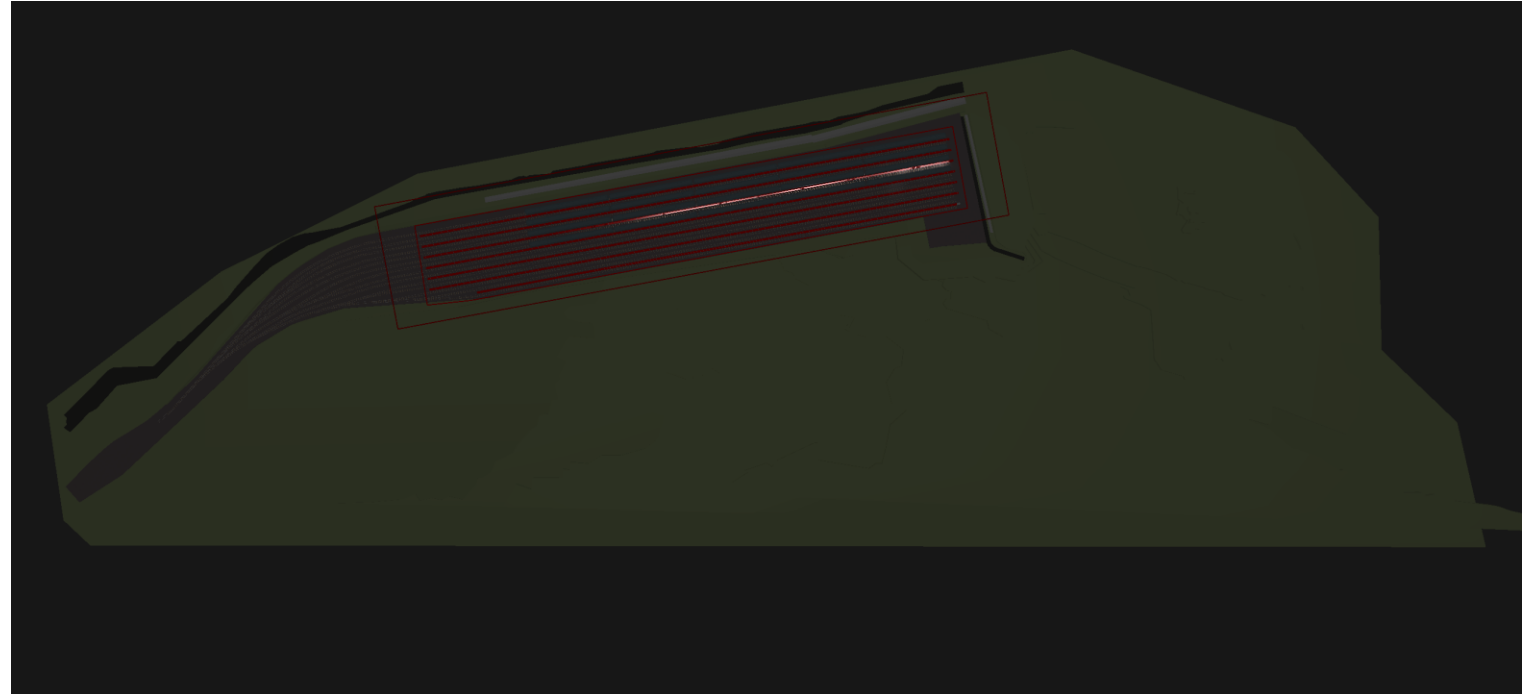
GCRE-PH1
Typical
Scenario
Model Plan
View Unlit



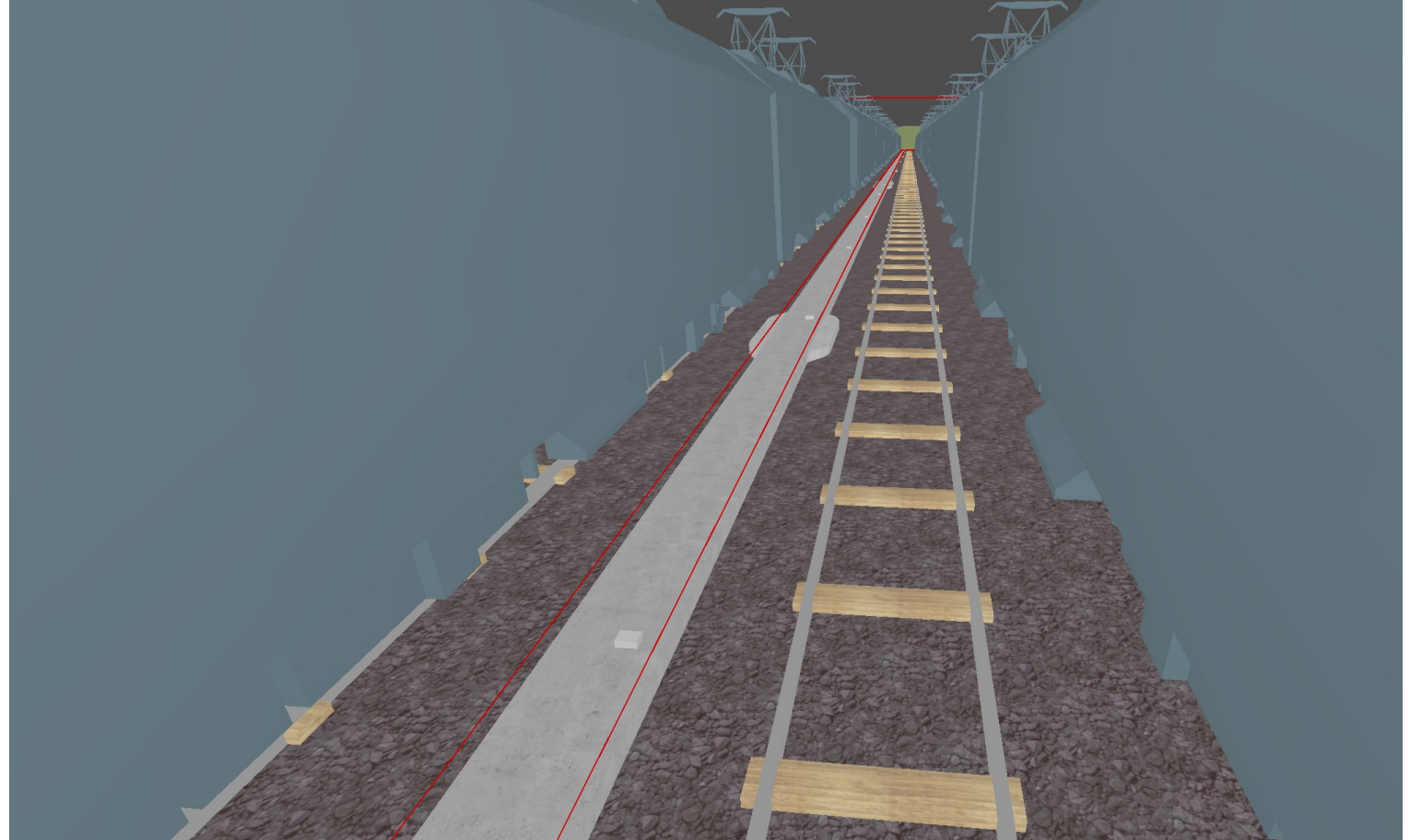
GCRE-PH1
Typical
Scenario
Model Plan
View Lit



GCRE-PH1
Typical
Scenario
Model Plan
Overlay Lit



GCRE-PH1
Typical
Scenario
Track View
Unlit



GCRE-PH1
Typical
Scenario
Track View Lit



GCRE
Phase 1
Typical Scenario
Sky Glow Results

GCRE-PH1 Typical Scenario Sky Glow Results

General

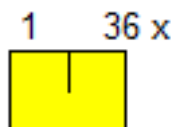
Calculation algorithm used low indirect fraction
Maintenance factor see luminaires / maintenance plan

Total luminous flux 22788 lm
Total power 302.4 W
Total power per area (684048.62 m²) 0.00 W/m²

Illuminance

Average illuminance	Em	0.04 lx
Minimum illuminance	Emin	0 lx
Maximum illuminance	Emax	0.88 lx
Uniformity Uo	Emin/Em	1:--- (---)
Diversity Ud	Emin/Emax	1:--- (---)

Type No.\Make



Designplan

Order No. : TRK-1200-630N-MT
Luminaire name : Trackline TRK-1200-630N-MT
Equipment : 1 x LED 8.4 W / 633 lm
Maintenance factor : 0.89

GCRE
Phase 1
Typical Scenario
Conclusion

GCRE-PH1 Typical Scenario Sky Glow Results

- The lighting illuminates all pathways above the minimum required maintained illuminance - 10lx, even when switched in sections.
 - Lighting design recommended illuminances are met
 - Health and Safety objectives are met
- The optics of the luminaires create very little light spill and the direct illuminance easily stays within the Phase boundary, so does lateral reflected light.
 - No light spill is observed at the ground measuring plane boundaries (All Tracks)
 - Reflected light is kept to a minimum
- Sky Glow is well within limits
 - With a measuring plane mounted at 20m above the tracks (Inverted Sky Glow) the measured illuminance rising to the plane is less than moonlight on a very dark night with cloud cover - just 0.04lx on average across a 500m x 100m measuring plane

The design is suitable and should be recommended to proceed.